REMARKS

This is intended as a full and complete response to the Final Office Action dated January 4, 2007, having a shortened statutory period for response set to expire on April 4, 2007. Please reconsider the claims pending in the application for at least the reasons discussed below.

Claims 1-18, 28-33, and 35-46 remain pending in the application. Claims 1-5, 28-31, 37, 42, and 43 are rejected. Claims 9-18 are indicated to be allowable by the Examiner. Claims 6-8, 32, 33, 35, 36, 38-41, and 44-46 are objected to by the Examiner. Reconsideration of the rejected claims and of the objected to claims is requested for the reasons presented below.

Applicants propose canceling claims 28-31 and rewriting claims 32, 33, and 35 in independent form. Applicants submit that the changes proposed herein reduce the issues for appeal and do not introduce new matter. Applicants respectfully request entry of the proposed amendments.

Claims 28, 29, and 37 stand rejected under 35 U.S.C. § 102(b) as being anticipated by *Friedmann, et al.* (U.S. Patent No. 6,103,305). Applicants respectfully submit that the rejection of claims 28 and 29 is rendered moot as Applicants propose canceling claims 28 and 29. Applicants respectfully traverse the rejection of claim 37.

Regarding claim 37, the Examiner states that *Friedmann, et al.* teaches a method of processing a substrate comprising silicon, comprising depositing a layer 30 comprising amorphous carbon on the silicon substrate (column 10, line 66 through column 11, line 1) and then exposing the silicon substrate to pulses of electromagnetic radiation (*i.e.*, a laser, column 13, line 29) under conditions sufficient to heat the layer to a temperature of at least about 300°C. Applicants respectfully submit that neither *Friedmann, et al.'s* description of annealing with a laser (column 13, line 29) nor the rest of *Friedmann, et al.* teaches or suggests exposing the substrate to pulses of electromagnetic radiation. Thus, *Friedmann, et al.* does not teach, show, or suggest a method of processing a substrate comprising silicon, comprising depositing a layer comprising amorphous carbon on the substrate, and then exposing the substrate to pulses of electromagnetic radiation under conditions sufficient to heat the layer to a

temperature of at least about 300°C, as recited in claim 37. Applicants respectfully request withdrawal of the rejection of claim 37.

Claims 1, 2, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Friedmann, et al.* in view of *Chou, et al.* (U.S. Patent Publication No. 2002/0055012). The Examiner states that *Friedmann, et al.* describes depositing a layer 30 comprising amorphous carbon on a silicon substrate (column 10, line 66 through column 11, line 1) and then exposing the silicon substrate to electromagnetic radiation (*i.e.*, a laser, column 13, line 29) under conditions sufficient to heat the layer to a temperature of at least about 300°C (*i.e.*, no more than 600°C, column 13, lines 26-27). The Examiner acknowledges that *Friedmann, et al.* does not describe the wavelength of the laser being between about 600 nm and 1000 nm. The Examiner states that *Chou, et al.*, in an analogous art, teaches heating by annealing the amorphous carbon by exposing it to electromagnetic radiation (*i.e.*, a laser beam, paragraph [0024], line 13) having a wavelength of 660 nm (paragraph [0024], line 16). The Examiner asserts that it would have been obvious to heat the amorphous carbon using a laser as taught by *Friedmann, et al.* with a wavelength of 660 nm, as suggested by *Chou, et al.*, since it would successfully anneal the amorphous carbon. Applicants respectfully traverse the rejection.

Friedmann, et al. describes depositing an amorphous carbon film with specific atomic structure and bonding on a substrate and annealing the film at a sufficient temperature to relieve compressive stress in the film without significantly softening the film (abstract). *Friedmann, et al.* teaches that the amorphous carbon films described therein have negligible amounts of hydrogen (column 1, lines 29-31 and column 3, lines 17-21) and are deposited from a graphite target (column 3, lines 1-4) . *Chou, et al.* describes depositing a hydrogenated amorphous carbon layer comprising 5 to 60 atomic percent hydrogen by plasma enhanced chemical vapor deposition (paragraphs [0015] and [0017]). The hydrogenated amorphous carbon layer is used as a recording layer 22 on a plastic substrate 21 of an optical data recording medium. *Chou, et al.* describes heating the substrate by irradiating it with a laser beam and states that the hydrogenated amorphous carbon layer recording layer 22 absorbs energy from the laser beam so as to release hydrogen to form recesses in the plastic substrate

(paragraph [0020]). While *Chou, et al.* describes using a laser beam having a wavelength of 660 nm to remove hydrogen from the hydrogenated amorphous carbon films described therein, Applicants respectfully submit that *Chou, et al.*, individually or in combination with *Friedmann, et al.*, does not teach or suggest using electromagnetic radiation having a wavelength of between about 600 nm and about 1000 nm to anneal *Friedmann, et al.'s* substantially different amorphous carbon film which has negligible amounts of hydrogen. In particular, *Chou, et al.* in view of *Friedmann, et al.* does not teach or suggest using electromagnetic radiation having a wavelength between about 600 nm and about 1000 nm or electromagnetic radiation having a wavelength of 660 nm as provided by *Chou, et al.* to remove hydrogen from a hydrogenated amorphous carbon film in *Friedmann, et al.'s* process of changing the bonding structure of an amorphous carbon film with a negligible amount of hydrogen without softening the film.

Thus, Applicants respectfully submit that *Friedmann, et al.* in view of *Chou, et al.* does not teach, show, or suggest a method of processing a substrate comprising silicon, comprising depositing a layer comprising amorphous carbon on the substrate, and then exposing the substrate to electromagnetic radiation having a wavelength between about 600 nm and about 1000 nm under conditions sufficient to heat the layer to a temperature of at least about 300°C, as recited in claim 1. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 1 and of claims 2 and 5, which depend thereon.

Claims 30, 31, 42, and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Friedmann, et al.*, in view of *Hayashi, et al.* (U.S. Patent No. 5,599,590). Applicants submit that the rejection of claims 30 and 31 is moot as Applicants propose canceling claims 30 and 31. Applicants respectfully traverse the rejection of claims 42 and 43.

Regarding claim 42, the Examiner acknowledges that *Friedmann, et al.* does not describe exposing the substrate to electromagnetic radiation provided by a lamp. The Examiner asserts that using lamp as the source of electromagnetic radiation for treating amorphous carbon has been widely used in the art, as evidenced by *Hayashi, et al.* (column 4, lines 48-50). The Examiner concludes that it would have been

obvious to anneal the amorphous carbon using a lamp, as taught by *Hayashi, et al.*, in *Friedmann, et al.'s* process since the lamp is an art recognized equivalent to the laser as the source of electromagnetic radiation.

Hayashi, et al. describes heating amorphous carbon coatings for magnetic disks to obtain a desired magnetic disk surface roughness (abstract, column 4, lines 48-50). *Hayashi, et al.* states that radiation from a laser or a lamp may be used to heat the amorphous carbon coatings. Applicants respectfully submit that *Hayashi, et al.* does not teach or suggest that lamps and lasers are equivalent sources of radiation for all methods of treating amorphous carbon film. In particular, Applicants submit that *Hayashi, et al.*, individually or in combination with *Friedmann, et al.*, does not teach or suggest using the electromagnetic radiation from a lamp that *Hayashi, et al.* provides to roughen an amorphous carbon surface in *Friedmann, et al.'s* method of annealing an amorphous carbon film to change the bond structure of the film to reduce the stress of the film without softening the film.

Thus, *Friedmann, et al.*, in view of *Hayashi, et al.* does not teach, show, or suggest a method of processing a substrate comprising silicon, comprising depositing a layer comprising amorphous carbon on the substrate, and then exposing the substrate to electromagnetic radiation provided by a lamp under conditions sufficient to heat the layer to a temperature of at least about 300°C, as recited in claim 42. Applicants respectfully request withdrawal of the rejection of claim 42 and of claim 43, which depends thereon.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Friedmann, et al.* in view of *Chou, et al.* as applied to claims 1 and 2 above, and further in view of *Hayashi, et al.* Applicants respectfully traverse the rejection.

Claims 3 and 4 depend on claim 1 and thus include the elements of claim 1. As discussed above, *Friedmann, et al.* in view of *Chou, et al.* does not teach or suggest all of the elements of claim 1 as *Friedmann, et al.* in view of *Chou, et al.* does not teach or suggest exposing the substrate of *Friedmann, et al.* to electromagnetic radiation having a wavelength between about 600 nm and about 1000 nm. Applicants submit that *Hayashi, et al.* does not describe exposing a substrate to electromagnetic radiation having a wavelength of between about 600 nm and about 1000 nm. Thus,

Applicants submit that *Friedmann, et al.* in view of *Chou, et al.* and *Hayashi, et al.* also does not teach or suggest all of the elements of claim 1, and in turn does not teach or suggest all of the elements of claims 3 and 4. Applicants respectfully request withdrawal of the rejection of claims 3 and 4.

Claims 6-8, 32, 33, 35, 36, 38-41, and 44-46 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants submit that claims 6-8 are also patentable for the reasons discussed above with respect to claim 1, upon which claims 6-8 depend. Applicants respectfully request withdrawal of the objection to claims 6-8.

Applicants have rewritten claims 32, 33, and 35 in independent form. Applicants respectfully request withdrawal of the objection to claims 32, 33, and 35. Applicants also respectfully request withdrawal of the objection to claim 36, which depends on claim 35.

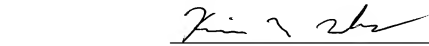
Applicants submit that claims 38-41 are also patentable for the reasons discussed above with respect to claim 37, upon which claims 38-41 depend. Applicants respectfully request withdrawal of the objection to claims 38-41.

Applicants submit that claims 44-46 are also patentable for the reasons discussed above with respect to claim 42, upon which claims 44-46 depend. Applicants respectfully request withdrawal of the objection to claims 44-46.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the Final Office Action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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